

# NASA TechTracS

## Detailed Design Document



*Graphical User Interface Update  
(Mod 88)*

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**Introduction**

This modification to NASA TechTracS was requested in a Work Request from Dianne Cheek of NASA LaRC on March 29, 2000, March 23, 2000 and July 28, 2000. The modification is designated as Mod 88.

It consist of changes and additions to existing data structures and revisions to displays, reports and processes.

This detailed design document contains sufficient information to complete the software development construction for Mod 88 and includes a detailed user interface mock-up. It also specifies the changes required to the user documentation and defines a quality assurance plan.



## Design Status

**10/02/2000**

Work began on the Design.

**10/23/2000**

Submitted for initial design approval. Corrections made.

**mm/dd/yy**

Submitted for Technical Review. Corrections made

**mm/dd/yy**

Submitted to client Dianne Cheeks for client Review.

**mm/dd/yy**

Items added to Issue table. Items resolved

**mm/dd/yy**

DDD approved. Construction begins

**mm/dd/yy**

Construction Completed. Testing begins.

**mm/dd/yy**

Testing Completed

**mm/dd/yy**

Delivered into production with Release FY xxxx.xx



**Design Overview**

**Development/Operational Environment**

**Design Methodology**

**Reuse Strategy**

**Quality Assurance**

## **Development and Operational Environment**

Modifications to TechTracS are required to be compatible with the following processors and operating systems:

1. Intel Pentium - Windows 95, Windows 98, Windows NT 4
2. Motorola PowerPC - Mac OS 8.x



## **Design Methodology**

Since this is a modification to the existing NASA TechTracS system, the standard "NASA TechTracS Design Methodology" shall be followed. See the support site for these methodologies.

The standards this Mod defines, deviates from and the methodology used specifically for this Mod are defined below.

- The default screen size for NASA TechTracS is larger, 800X600
- Unused objects are invisible or dimmed
- All Data Windows are equal and operate within their own processes
- The Data Control Panel is replaced by the Control Center with Quick Functions, Tables and Options
- The Data List Window has columns with titles that are sortable and contain splitters
- The Data Record Window has a "Tab" interface rather than a "Menu" interface to navigate between it's pages
- Most icons are new while the functions are the same or similar though their placement is different
- The Keyword interface is updated. As the user types, matching keywords are displayed in a panel allowing the user to select the desired keyword(s).
- The 4D Draw productivity window is available from the reports window

## Reuse Strategy

Since this development effort is primarily a series of modifications to an existing module in NASA TechTracS, extensive re-use of existing forms and reports will be made. The tools and objects currently in use in NASA TechTracS will be employed where appropriate. These include:

- Custom find methods
- Streamlined relate methods (Relate pop-up)
- Page navigation methods (Tab interface)
- Record navigation methods (Navigation icons)
- List Manager pop-up menus
- People and Company autolinking (Business Card buttons)
- Keyword management module
- Auto Agent/Personal Agent batch processing
- Record maintenance audit (I button)
- Standard List window methods
- Standard Record window methods

## Quality Assurance

In order to maintain high quality design and construction the following QA elements will be incorporated:

- All program code must adhere to defined standards, especially in the area of method, form and object naming conventions. The support website contains details of these in the "Coding and Structure Rules" link. More in depth programming standards are also on the support site via the "KSS 4D Programming Rules"
- All system interfaces must also adhere to NASA defined standards. The support website contains these "NASA TechTracS Interface Standards".
- All errors discovered during any formal testing will be recorded in the online Bug Reporting System. This will help ensure that errors are not identified more than once and that they are properly resolved.
- Unit Tests of discrete components will be performed by the developer. These components will be identified in the Detailed Development Plan. As far as is practicable, the goal of this testing is to prove that a given software component performs as designed before it is exposed to the larger environment of integration or system testing. For example, each method should be unit tested to verify proper use of passed parameters and, if appropriate, returned results. Developers will also verify that the components adhere to the Component Checklists as part of the Unit Test. See the Component Reviews below for more details.
- Developers will perform source code tracing where appropriate to prove that the code executes as expected. Research has shown that regular use of source code tracing and unit testing will identify many errors early in the development cycle. Errors identified early are more easily and more cost-effectively resolved.

- Component Reviews will be conducted by an appointed reviewer(s) and reported to the developer. The Component Review Checklists will be used to ensure consistent review quality. Once a component has passed its review, it may participate in integration testing. Part of the review will include an analysis of the component by scanning TechTracS source with SanityCheck from Committed Software. SanityCheck is an application that will perform a read-only scan of the 4th Dimension™ structure file. SanityCheck sifts through the structure file looking for common programming problems as well as checking the integrity of all objects (Forms, Methods, etc) within the structure file. The component checklists are also available on the support site for the following links: Construction Component Checklist", "Form Checklist", "Structure Checklist", and "Code Checklist".
- Integration Tests will be conducted to ensure that all new or modified components perform as expected when combined with other elements of NASA TechTracS. Due to the integrated nature of the TechTracS development process, extensive, detailed integration testing is inappropriate. However, sufficient testing should be performed to ensure compatibility with other components of the system.
- System Tests will be combined with testing of other modifications that are scheduled for the same release. A system test sequence will be developed to fully validate that the modifications have been properly implemented. After release, the system test sequence should be incorporated into regression test plans for future modifications.

**User Manual**

The Data Control Panel, List Window and Record window section of the TechTracS User Manual and/or the SuperUser manual will be revised to reflect the changes detailed by this entire Modification. The documentation must also be revised to include a new section in the 4D Draw productivity window. The revisions shall contain detailed descriptions of the operations available to the user and will be prepared as an independent document that can be manually inserted into the existing user manual and will also be made available electronically as a PDF file.



## Requirements Matrix

The Requirements Matrix is key map denoting what areas of development are necessary to fully satisfy the requirements. The "Req. Area" refers to the Item area listed in the Storyboard of the Requirements Document for this mod. The "Req." column refers to the Item number corresponding to that used in in the specified area of the Storyboard of the Requirements Document for this mod. The remaining columns list the Structure, Record Form/Custom Dialog, List Form/Find Dialog, Custom Report and Major Method/Other items created or modified to meet the specified requirement number. Details on these items can be found in the Detailed Development Plan section.

Requirements Matrix

Req. Area	Req.	Structure	Record Form	List Form	Report	Methods / Other
I. Common Characteristics						
	1		"Help Message" of each object's Property List	"Help Message" of each object's Property List		cc_ShowTips
	2		"Stylesheet" of each object's Property List	"Stylesheet" of each object's Property List		
	3					Form Method: <b>Input</b> Form Method: <b>Output</b>
	4					Form Method: <b>Input</b> <b>InputMethod</b> Form Method: <b>Output</b> <b>OutputMethod</b> "Column Objects"
	5					<b>ShowTable</b>
	6					Form Method: <b>Input</b> Form Method: <b>Output</b> <b>ShowTable</b>

Requirements Matrix (cont'd)

Req. Area	Req.	Structure	Record Form	List Form	Report	Methods / Other
II. Control Center						
	1					Startup
	2					cc_Manager
	3-5		[Constants]Control_Center "Form Properties"			
	6		[Constants]Control_Center			cc_Hierarchical_List
	6a - 6d		[Constants]Control_Center			Set Prompt cc_QF_DataEntry Showtable cc_NewRecordEntry
	6e		[Constants]Control_Center			cc_HomeSettings Form Method: Control Center
	7 - 7e		[Constants]Control_Center			cc_Hierarchical_List.
	7f - 7f.4		[Constants]Control_Center			cc_Hierarchical_List
	8 - 8a		Constants]Control_Center			cc_ShowTips
	9 - 9a.2		"Form Properties" for [Constants]Control_Center			MenuBar #x
III. Data Window - List						
	1			[Constants] Output_Template All Output forms		Form Method:Output OutputMethod ShowTable
	2 - 5			[Constants] Output_Template All Output forms "Form Properties"		



Requirements Matrix (cont'd)

Req. Area	Req.	Structure	Record Form	List Form	Report	Methods / Other
	5a - 5b			[Constants] Output_Template All Output forms		<b>OutputSort</b> "Splitter" Object Property between titles
	6 - 7a			[Constants] Output_Template All Output forms "Form Properties"		
	7b - 7b.3			[Constants] Output_Template All Output forms "Form Properties"		"Hierarchical Pop-up" Menu Object op_PopUp List
	8					MenuBar #2
	9			[Constants] Output_Template All Output forms "Form Properties"		<b>mQueryEditor</b> <b>mQuickFind</b>
IV. Data Window - List						
	1 - 4		[Constants] Input_Template Each Input form's "Form Properties"			
	4a - 4c		Each Input form's "Form Properties"			
	5		[Constants] Input_Template Each Input form's "Form Properties"			
	6 - 6b.4		Each Input form's "Form Properties"			
	6c		[Constants] Input_Template Each Input form's "Form Properties"			
	7					MenuBar #2

Requirements Matrix (cont'd)

Req. Area	Req.	Structure	Record Form	List Form	Report	Methods / Other
	8 - 9		[Constants] Input_Template Each Input form's "Form Properties"			
V. Function Area Common Operators						
	1 - 4		[Constants] Input_Template Each Input form's "Form Properties"			
	4a - 4b		[Constants] Input_Template Each Input form's "Form Properties"	[Constants] Output_Template All Output forms "Form Properties"		
VI.. Keyword						
	1 - 8		[xToolkit]KeyWords			kw_getKeywords
VII. 4D Draw						
	1 - 2					do4dDraw Menubar #2

## Detailed Development Plan

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## **Introduction**

This Modification is a redesign of the entire interface of NASA TechTracS. The changes include modifications to existing forms in addition to new tables and fields. Many display items including buttons menu items and are redesigned to accommodate the database changes.

**Structure**

In order to support the requirements of this modification, no changes or additions to the existing NASA TechTracS database structure must be performed.



Record Forms/Custom Dialogs

The following record forms (data input windows) and custom dialogs need to be added or modified as result of this mod. As a general rule, all data forms will be modified to have the new standard background and function areas while the current field layout per page will remain the same.

The layouts below describe the changes that need to be made to each data form except as denoted below.

[Constants]Input\_Template

Form Name: [Constants]Input\_Template

New or Modified: New

Menu Bar: -2

Description: Template used for all the data screens in NASA TechTracS

Page(s)		
Page Number	Name	New
0.	n/a since this is the Default Background	Yes

**Page Number:** 0**Page Name:** n/a**Method(s):** None**Fields Used on Page 0**

None

**Other Objects Used on Page 1**

Req.	Type	Description
I:1	Each Object	The "Help Message" Objects item of every object will have a value
I:2	Text Object	The appropriate Stylesheet must be set
IV:1, IV:3	Window Object "Form Properties"	Opens in place of Data Window - List and is comprised of three areas: Header, Data, and Function.
IV:2	Window Object "Form Properties"	Window title contains name of table, the position of the current record in the selection, and the number of records in the current selection (as in previous TechTracS version). Eg: "Technology: 7 of 10 Records in selection."
IV:4 - IV:4.c	Header Area and Objects "Form Properties"	Header area occupies the top portion of the window and contains record identification, and navigation. Data in the header area is visible across all pages of record. - One or more fields that support the identification of the record is displayed in the header area. these fields may be enterable (depending on table). - The record audit window is accessible via the "I" button. - For tables that have multiple pages, a page navigation pop-up menu is available that provides a direct jump to a selected page.
IV:5	Data Area and Objects "Form Properties"	Data area contains page specific data similar to previous version of TechTracS. When the Data window is stretched the Data area expands to fill the space. Some tables used a different color in the page-title to impart important information. They will now use the informational message section in the Header area. Important and required fields are identified by being highlighted in red: the data itself or the objects text .



Input\_Template's Other Objects Used on Page 1 (con't)

Req.	Type	Description
IV:5a IV:5b, IV:9	Tab Interface "Form Properties"	<p>Page identification and navigation is provided by a tabbed interface that starts immediately below the Header area and occupies the entire window down to, but excluding, the Function area and consumes the entire width of the window.</p> <ul style="list-style-type: none"> <li>- Each page is identified and named by a tab.</li> <li>- Clicking a tab moves the user to that page.</li> <li>- If there are more tabs than will fit horizontally in the available space, a tab-scroller will appear at the right end of the tab object allowing the user to scroll other tabs into view.</li> <li>- The "More" pop-up in the previous version of TechTracS is eliminated. It is replaced by the tabs in the Data area and the page navigation pop-up in the Header area.</li> </ul>
IV:6	Function Area "Form Properties"	Function area occupies space across the footer of the window and appears on all pages.
IV:6a	Cancel & Accept Button "Form Properties"	"Cancel" and "Accept" buttons in lower right corner of Function Area performs same record cancel and save operations as previous version of TechTracS. Keyboard shortcut for Cancel is command-period (or control-period) and for Accept is the Enter key.
IV:6b - IV:6b.4	Jump Icons	<p>A number of "jump icons" are available in the Special Purpose section of Operations panel:</p> <ul style="list-style-type: none"> <li>- Only appear when supplemental information is present in the record. Their purpose is to bring attention to the supplemental information.</li> <li>- Usually takes on the form of a small graphic object.</li> <li>- When visible and clicked, jumps the user to the page containing the supplemental information</li> </ul>
IV:6c	Message Area	The bottom portion of the function area is reserved for informational messages.
IV:8 V:3a - V:3a.4	Navigation Section	<p>This graphic in the Function Area replaces the "Record" pop-up from the previous versions of TechTracS. The Navigation section follows the Action section and contains four graphical buttons (disabled in List window).</p> <ul style="list-style-type: none"> <li>- First Record Button moves to the first record in the current selection.</li> <li>- Previous Record Button moves to the previous record in the current selection</li> <li>- Next Record Button moves to the next record in the current selection</li> <li>- Last Record Button moves to the last record in the current selection.</li> </ul>

Input\_Template's Other Objects Used on Page 1 (con't)

Req.	Type	Description
V:1	Query Panel "Form Properties"	The Query panel occupies the top half of the Function area and provides the "Find By" and "Query Editor" facilities
V:1a	Find By facility "Form Properties"	<p>"Find By" buttons are one or more buttons that implement the previous Find By tool.</p> <ul style="list-style-type: none"> <li>- If the table has no Find functions the buttons are not visible.</li> <li>- The buttons are placed sequentially following the "Find By" prompt on the left of the Query panel</li> <li>- Individually the buttons implement the separate pages of the previous Find dialog.</li> <li>- If there are more Find By buttons than will fit in the available space, the right-most buttons will be invisible until the window is sufficiently enlarged.</li> </ul>
V:1b	Query Editor facility "Form Properties"	"Query Editor" button is located on the far right of the Query panel and shows the Query Editor.
V:2	Operation Panel "Form Properties"	The Operation panel occupies the lower half of the Function area and provides various operations grouped into four sections: Action, Special Purpose, Navigation and Control
V:2a -	Action section	The Action section occupies the left portion of the Function area and contains five graphical buttons. Each graphical button (or icon) will provide a help tip that describes its function:
V:2a.1	"Help" button	Displays the standard TechTracS Structure and Data Dictionary windows (located in the Action section)
V:2a.2	"New" button	Allows user to add a new record to the table (located in the Action section)
V:2a.3	"Sort" button	Presents the built-in Sort Editor. Disabled in Record window (located in the Action section)
V:2a.4	"Print" button	Presents the same print dialog as in the previous version of TechTracS (located in the Action section)
V:2a.5	"Report" button	Presents the built-in Quick Report Editor. Disabled in Record window (located in the Action section)

Input\_Template's Other Objects Used on Page 1 (con't)

Req.	Type	Description
V:2b - V:2b.2	Special Purpose section	Follows the Action section in the Function area and contains either: - Jump icons in the Record window or - Hierarchical pop-up menu in the List window
V:4	Control Section	The Control section occupies the far right end of the Function area and contains either: - "Cancel" and "Accept" buttons in the Record window or - "Close" button in the List window

Special Processing on Page 1

None

Mockup of [Constants]Input\_Template

**Technology: Record 1 of 48**

Case No.

NTR Title

Info. **Abstract** Related Cases Int. Comm. Assessment Ext. Comm. Assessment Comm. General ...

**Status**






NTR Received Dt

NTR Reported Dt

**Origin**

<input type="checkbox"/> In-House	<input type="checkbox"/> Grant	<input type="checkbox"/> Subcontract	<input type="checkbox"/> Other
<input type="checkbox"/> Joint	<input type="checkbox"/> Prime Contract	<input type="checkbox"/> Multiple Contractor	

Find by... **Keyword** People Contract Company Fiscal Year Prog Area Query

? **New** Sort Print Report      Cancel Accept

This is a message area that shows important information about this record

**[Constants]Control\_Center**

<b>Form Name:</b> [Constants]Control_Center
<b>New or Modified:</b> New
<b>Menu Bar:</b> -2
<b>Description:</b> The existing Data Control Panel is eliminated in favor of a new interface called the Control Center.

**Page(s)**

Page Number	Name	New
1.	n/a since this screen uses the window title for identification	Yes

**Page Number:** 1**Page Name:** n/a**Method(s):** Form Method: **Control\_Center**

Controls the availability and function of several Control center buttons

Fields Used on Page 1

Req.	Field Name	Label
II:6a	Variable entry	defined by the quick find field for the user selected table

Other Objects Used on Page 1

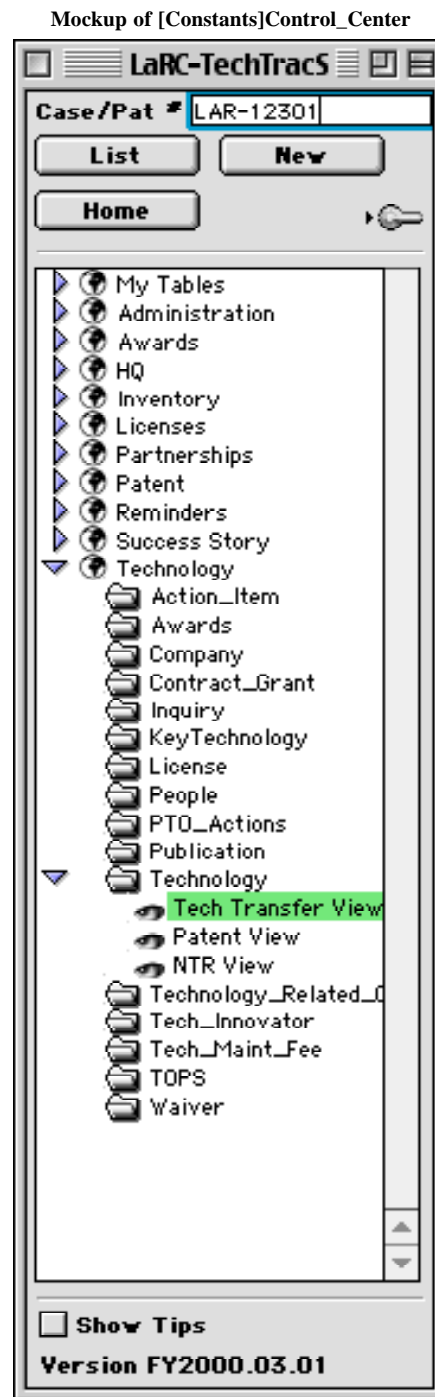
Req.	Type	Description
II:3 - II:5, II:7, II:8, II:9-II:9a.2	Window Object Form Properties	Wndow properties allows movable stretchable area with Site Code and release information along with display of the Quick Fubction, Table and Option area. Window has File menu with Preferences and Exit/Quit items
II:6, II:7a - II:7e	Hierarchical List	Control_Center Area containing the names of the table groups and tables. Uses the <b>cc_Hierarchical_List</b> method to define selected table and process appropriate actions: - when a module is selected and its contents disclosed (by clicking the small plus (+) button in Windows or the small triangle in Macintosh, alongside the module name or by double-clicking the entry), the hierarchical list expands to reveal the tables that are assigned to the module. - the table assignments are the same as the previous Table Groups). - when the Control Center is displayed, the tables are listed alphabetically within the module and the .primary table for the module is automatically selected.
II:6b	Data Entry	Area accepts query criteria and performs query when cursor leaves the area. Similar to previous Quick Find function.
II:6c	List Button	Is disabled until a table is selected. When clicked, a data window is opened for the selected table. If a data window is already open, it is brought to the front and made active. Option key or alt key forces the table to open in a new data window.
II:8a	Show Tips Checkbox	User clicks to displays or hide tips (pop-up help).

Control\_Center's Other Objects Used on Page 1 (con't)

Req.	Type	Description
II:6d	New Button	Is disabled until a table is selected. When clicked, a data window is opened for the selected table and a new record is created. If a data window is already open, it is brought to the front and made active and a new record is created. Option key or alt key forces the table to open in a new data window.
II:6e	Home Button	Restores a user's preferred table. When clicked, the current data window (or a new one if there is none) changes to show a previously defined table. It's specified by holding down the alt (option) key and clicking the "Home" button. The user is asked to confirm that the current Control Center configuration is to be restored at subsequent log-ins. The selected table will be opened into a data window. If the Quick Find data entry area has a non-null value, it will be saved in the Default setting and the Quick Find will be performed.

Special Processing on Page 1

Req.	Type	Description
II:7d - II:7e	Hierarchical List	Double clicking a table performs the same function as selecting the table and clicking the "List" button. Double clicking a module performs the same function as selecting the module, expanding the list of tables, selecting the primary table, and clicking the "List" button
II7f - II:7f.4	Technology Views	To support requirement for different views (TT View, Patent View, NTR View), the Technology item in the Tables hierarchical list will optionally have sub-items depending on user privileges: - If user has no "alt-view" privileges, no sub-items are displayed and Technology view is their normal view. - If user has "alt-view" privileges, two or more sub-items are displayed showing view options with primary view selected. - Selecting sub-item chooses view to use in Data Window - This approach permits the option of the use of alternate views in List as well as Record window.





**[xToolkit]KeyWords**

<b>Form Name:</b> [xToolkit]Keywords
<b>New or Modified:</b> New
<b>Menu Bar:</b> -2
<b>Description:</b> This revised Keyword interface is presented when user clicks on the "+" (add keyword) button in the Keyword panel on a Data screen

**Page(s)**

Page Number	Name	New
1.	n/a since this screen uses the window title for identification	Yes

**Page Number:** 1**Page Name:** n/a**Method(s):** KW\_getKeywords

Displays first keyword and selection of all keywords matching user entry

Fields Used on Page 1

Req.	Field Name	Label
VI:3	Variable entry	1. Type Keyword


Other Objects Used on Page 1

Req.	Type	Description
VI:1 VI:2	Keyword Window	Keyword Window appears with - Panel 1 and panel 2 are both initially empty. - Panel 3 shows existing keywords assigned to the current record
VI:8	Buttons	User Accepts or Cancels entries using OK or Cancel buttons.

Special Processing on Page 1

Req.	Type	Description
VI:3, VI:4	Type Keyword area	When user begins typing, as each character is typed, - the Keyword system is automatically querying the Keyword master list for keywords that begin with the character(s) typed. - Panel 2 displays all keywords found. - Panel 1 is updated to show the first candidate keyword. - Remaining characters are selected in panel 1 so that any further typing by user replaces selected text. - This is repeated for each character typed
VI:5 -	User Activity	- User may select at any time any keyword listed in panel 2 by double-clicking or dragging to panel 3. - User "control-tabs" or "command-tabs" in panel 1 to accept candidate keyword and add it to panel 3. - User double-clicks item or drags item from panel 3 to trash to remove keyword from selected keyword list.

Mockup of [xToolkit]KeyWords

<p><b>1. Type Keyword</b></p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">keyword</div> <div style="text-align: right; margin-bottom: 10px;"><input type="button" value="New"/></div> <p><b>2. Or Choose Keyword</b></p> <div style="border: 1px solid black; padding: 2px;"><div style="background-color: #000080; color: white; padding: 2px;">keyword</div><div>label</div><div>LAN</div><div>landscape</div><div>last</div><div>LastPrintedDate</div><div>LastSavedBy</div></div>	<p><b>3. Selected Keyword(s)</b></p> <div style="border: 1px solid black; padding: 5px; min-height: 150px;">label LAN landscape</div>
<p>Here will be the detailed instructions on how to use this keyword type-ahead/clairvoyance system</p> <div style="text-align: right;"> Delete</div>	
<div style="display: inline-block; border: 1px solid black; padding: 5px 20px; margin: 0 10px;">Cancel</div> <div style="display: inline-block; border: 1px solid black; padding: 5px 20px;">OK</div>	



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**List Forms/Find Dialogs**

The following List forms and Find dialogs need to be added or modified as result of this mod:

**[Constants]Output\_Template**

<b>Form Name:</b> [Constants]Output_Template
<b>New or Modified:</b> New
<b>Menu Bar:</b> -2
<b>Description:</b> All existing list screens (output forms) will be updated to use a new standard described herein

**Field(s) Used**

Req.	Field Name	Label
III	Same as seen on current tables NASA guidelines	The database field name except as defined by

**Relate(s)**

Req.	Table
III.	Same as currently defined

**Find(s)**

None

Other Objects Used on Page 1

Req.	Type	Description
I:1	Each Object	The "Help Message" Objects item of every object will have a value
I:2	Text Object	The appropriate Stylesheet must be set
III:1 - III:5	Window Object "Form Properties"	<ul style="list-style-type: none"> <li>- Opens alongside Control Center or in location specified by user when table was previously closed.</li> <li>- May open automatically if user has specified a Home table in Control center.</li> <li>- Window is movable and stretchable.</li> <li>- It's minimum size is such that it will fit (along with the Control Center) on a monitor configured to 800x600 resolution.</li> <li>- Window title contains name of table and number of records in the current selection of records (as in previous TechTracS version).</li> <li>- Data Window - List is comprised of three areas: Header, Data, and Function.</li> <li>- Header area contains column titles and splitters.</li> </ul>
III:5a	Columns "Form Properties"	Column titles normally show the name of the field used in the column unless constrained by space. Title may be clicked to sort the records by the values in the column. Alt or Option key reverses the sort order when column is clicked. Column title is underlined when data is sorted by column.
III:5b	Dividers "Form Properties"	Dividers between column titles may be dragged to enlarge or reduce the column width.
III:6 - III:6a	Data Area "Form Properties"	Data area shows multiple rows of data from the selected records in the table and supports vertical scrolling. When the Data window is stretched the Data area expands to fill the space. Double clicking a row retrieves that record from the table and displays the Record data in the window, temporarily displacing the List data.
III:7 -	Function Area "Form Properties"	<p>Function area occupies space across the footer of the window:</p> <ul style="list-style-type: none"> <li>- "Close" button in lower right corner of Function Area dismisses window.</li> <li>- "Close" Keyboard shortcut is command-period or control-period.</li> <li>- Three pop-up menus are available in the Special Purpose section of Operations panel via the "Operation..." hierarchical pop: <ul style="list-style-type: none"> <li>"Sets" - same function as previous "Sets" pop-up. Shows current sets (if any) and allows user to load set, create set or access Set Manager.</li> <li>"Quick Relates" - same function as previous "Relations" pop-up. Shows optional related tables and performs related query and switch to table.</li> <li>"Module Tables" - same function as previous "Tables" pop-up. Shows other tables in module and allows user to switch to one of them</li> </ul> </li> </ul>

Mockup of [Constants]Output\_Template

Technology: 48 of 48		
Case_Number	NTR_Title	Date Recvd.
LAR-11085-1	A Circuit To Control The Electroplating Process	01/04/1972
LAR-11087-1	Quiet Jet Transport Aircraft	12/28/1971
LAR-11088-1	Fire Warning System	12/28/1971
LAR-11089-1	Double-Gimballed, Dual-Coaxial-Rotor Device	12/29/1971
LAR-11091-1	Quartz Shielded Thermocouple	01/03/1972
LAR-11093-1	12-Leaf Torsional Flexure Pivot	01/07/1972
LAR-13189-1	High Integrity Dual Input Power Supply	06/29/1983
LAR-13191-1-CU	Solid-State Non-Planar Internally Reflecting Ring Laser	07/08/1983
LAR-13344-1-CU	End Pumped Nonlinear Laser Oscillator	06/29/1984
LAR-13499-1-SB	Multicomponent Force - Torque Sensor	07/22/1985
LAR-13508-1-CU	Thermal Remote Anemometer Device Thread	08/19/1985
LAR-13582-1	Redundant, Confined-Explosive Severance	01/24/1986
LAR-13586-1	Shuttle Orbiter With Telescoping Main Prolusion Unit And Paylo	02/07/1986
LAR-13603-1	For Impregnating Resin Solutions With Very High Viscosities	03/17/1986
LAR-13609-1	Helicopter Stopped Tail Rotor	03/20/1986
LAR-13615-1	Real Time Simulation Clock	06/09/1986
LAR-13616-1	Test Single-Layer, Multi-Color, Electroluminescent Phosphor	04/09/1986
LAR-13674-1-CU	Diode Pumped Nd: glass Laser	09/04/1986
LAR-13734-1-CU	Airplane Takeoff And Landing Performance Monitoring System	12/09/1986
LAR-13745-1-SB	Composite Laminate with Enhanced Through-the-Thickness Pro	01/20/1987
LAR-13870-1-CU	Serrated Trailing Edges for Improved Lift and Drag of Lifting S	09/08/1987
LAR-13894-1	Noninvasive Technique to Measure Intracranial Pressure and P	10/01/1987
LAR-13929-1-SB	Friedel - Crafts Reaction at Surfaces	11/25/1987
LAR-13930-1-SB	Composite Substituents for Rheologic Beadings	11/25/1987

Find by... **Keyword** **People** **Contract** **Company** **Fiscal Year** **Prog Area** **Query**

? **New** **Sort** **Print** **Report** **Operation...**  **Close**





## **Custom Reports**

In order to support the requirements of this modification, no changes or additions to the existing NASA TechTracS Custom Reports must be performed.



**Major Methods**

The following methods (including conversion methods) need to be added or modified as result of this mod:

**Method Name:** cc\_ShowTips

**New or Modified:** New

**User Method:** No

**Requirement(s):** I:01- Pop-up help tips will describe the function of each object.  
II:8a - "Show Tips" check box displays or hides tips (pop-up help).

**Description:** This is the Object method for the Show Tips checkbox in the Control Center. Code to set the tips state based upon the status of the Show Tips checkbox.

**Method Name:** Form Method: **Input**

**New or Modified:** New

**User Method:** No

**Requirement(s):** I:04 - Window locations and sizes will be remembered across user sessions.  
I:03 - Unused objects will be invisible or dimmed.  
I:06 - Some functions in TechTracS respond to users activities in other windows. They and their process communication mechanisms are updated so that they respond to the front most of multiple data windows.

**Description:** This is the Form method for the the Record form. Most will have the code described herein and code specific to the table and form.

This method should call the **InputMethod** method to make sure the menu bar gets updated, the title bar gets updated, etc. This method also sets the visibility of buttons, tracks the resizing and position of the screen and sets the record's message value.

**Method Name:** InputMethod

**New or Modified:** New

**User Method:** No

**Requirement(s):** I:04 - Window locations and sizes will be remembered across user sessions.

**Description:** Makes sure the menu the menu bar gets updated, the title bar gets updated, set buttons, etc.

**Method Name:** Form Method: **Output**

**New or Modified:** New

**User Method:** No

**Requirement(s):** I:04 - Window locations and sizes will be remembered across user sessions.

I:03 - Unused objects will be invisible or dimmed.

I:06 - Some functions in TechTracS respond to users activities in other windows. They and their process communication mechanisms are updated so that they respond to the front most of multiple data windows.

III:01 - Opens alongside Control Center or in location specified by user when table was previously closed. May open automatically if user has specified a Home table in Control center.

**Description:** This is the Form method for the the List form. Most will have the code described herein and code specific to the table and form.

This method should call the **OutputMethod** method to make sure the menu bar gets updated, the window closes if the user selects close/exit and positions are saved/restored. This method also sets the visibility of buttons, tracks the resizing and position of the screen

**Method Name:** OutputMethod

**New or Modified:** New

**User Method:** No

**Requirement(s):** I:04 - Window locations and sizes will be remembered across user sessions.  
III:01 - Opens alongside Control Center or in location specified by user when table was previously closed. May open automatically if user has specified a Home table in Control center.

**Description:** This will make sure the menu bar gets updated, and the window closes if the user selects "Exit/Quit" or "Close All Windows". It also restores the positions of the column titles and restores the positions of all of the other moveable objects,

**Method Name:** ShowTable

**New or Modified:** New

**User Method:** No

**Requirement(s):** I:05 - The previous concept of a single primary data window and one or more secondary data windows is now obsolete. All data windows are equal and operate within their own processes.

I:06 - Some functions in TechTracS respond to users activities in other windows. They and their process communication mechanisms are updated so that they respond to the front most of multiple data windows.

II:06c - "List" button is disabled until a table is selected. When clicked, a data window is opened for the selected table. If a data window is already open, it is brought to the front and made active. Option key or alt key forces the table to open in a new data window.

III:01 - Opens alongside Control Center or in location specified by user when table was previously closed. May open automatically if user has specified a Home table in Control center.

**Description:** Opens table windows. If a table process for the specified table is already open, then it is brought to the front. If it isn't running, then a new process is created. If you pass the True as the second parameter, then a new process is created even if a process is already running for that table (Uepses Alt or Command key). This is also called from the List button object method

**Method Name:** Startup

**New or Modified:** Modified

**User Method:** No

**Requirement(s):** II:01 - Opens automatically at end of log-in sequence

**Description:** Modify code to display the Control Center rather than the Data Control panel

**Method Name:** cc\_Manager

**New or Modified:** New

**User Method:** No

**Requirement(s):** II:02 - Opens on the top-left side of the application window or in location specified by user at end of previous session.

**Description:** Opens the Control Center in the default location or brings the control center to the front or displays the control center in it's last location.

**Method Name:** cc\_Hierarchical\_List

**New or Modified:** New

**User Method:** No

**Requirement(s):** II:06 - Quick Functions panel contains name of currently selected table, Quick Find prompt and data entry area, "List", "New", and "Home" buttons.

II:07 - The Tables panel is an alphabetically sorted hierarchical list of TechTracS modules (known as Table Groups in previous version). When the Control Center window is stretched the Tables panel expands to fill the space. Also helps meet all reqs under II:07

**Description:** When a group is clicked, the list of tables for that group is displayed and double clicked tables are opened in the list form

**Method Name:** Set Prompt

**New or Modified:** Modified

**User Method:** No

**Requirement(s):** II:06a - Quick Find prompt varies depending on table selected.

**Description:** Handles display and querying of Quick Find function by setting the vQF\_Prompt variable based upon the current table.

**Method Name:** cc\_QF\_DataEntry

**New or Modified:** New

**User Method:** No

**Requirement(s):** II:06b - Quick Find data entry area accepts query criteria and performs query when cursor leaves area. Similar to previous Quick Find function.

**Description:** Quick Find object method that uses the prompt to determine whether to call the **QuickFind** method to do the actual query and display; much like the **vCont** method.

**Method Name:** cc\_NewRecordEntry

**New or Modified:** New

**User Method:** No

**Requirement(s):** II:06d - "New" button is disabled until a table is selected. When clicked, a data window is opened for the selected table and a new record is created. If a data window is already open, it is brought to the front and made active and a new record is created. Option key or alt key forces the table to open in a new data window.

**Description:** Handles display of a new record data window for the current table.



**Method Name:** cc\_HomeSettings

**New or Modified:** New

**User Method:** No

**Requirement(s):** II:6e - "Home" restores a user's preferred table. When clicked, the current data window (or a new one if there is none) changes to show a previously defined table. The user may specify the Home table by holding down the alt (option) key and clicking the "Home" button. The user is asked to confirm that the current Control Center configuration is to be restored at subsequent log-ins. The selected table will be opened into a data window. If the Quick Find data entry area has a non-null value, it will be saved in the Default setting and the Quick Find will be performed.

**Description:** Records and sets the current settings in the preferences for login

**Method Name:** Form Method: **Control\_Center**

**New or Modified:** New

**User Method:** No

**Requirement(s):** II:6e - "Home" restores a user's preferred table. When clicked, the current data window (or a new one if there is none) changes to show a previously defined table. The user may specify the Home table by holding down the alt (option) key and clicking the "Home" button. The user is asked to confirm that the current Control Center configuration is to be restored at subsequent log-ins. The selected table will be opened into a data window. If the Quick Find data entry area has a non-null value, it will be saved in the Default setting and the Quick Find will be performed.

**Description:** This is the Form method for the the Control Center. It sets the Home button text according to the user actions

**Method Name:** OutputSort

**New or Modified:** New

**User Method:** No

**Requirement(s):** III:5a - Column titles normally show the name of the field used in the column unless constrained by space. Title may be clicked to sort the records by the values in the column. Alt or Option key reverses the sort order when column is clicked. Column title is underlined when data is sorted by column.

**Description:** Object method over titles on List form that sorts ascending and descending by the labeled field

**Method Name:** mQueryEditor

**New or Modified:** New

**User Method:** No

**Requirement(s):** III:9 - The Query pop-up in the previous version of TechTracS is eliminated. The commonly used queries are provided by the Find By, Quick Find, and Query Editor buttons. The other query mechanisms are still available via the menu bar.

**Description:** Displays 4D's Query Editor dialog.

**Method Name:** mQuickFind

**New or Modified:** New

**User Method:** No

**Requirement(s):** III:9 - The Query pop-up in the previous version of TechTracS is eliminated. The commonly used queries are provided by the Find By, Quick Find, and Query Editor buttons. The other query mechanisms are still available via the menu bar.

**Description:** Displays the new Find dialog, unless the Option/Alt key is down. In this case 4D's Query Editor is displayed instead

**Method Name:** kw\_getKeywords

**New or Modified:** New

**User Method:** No

**Requirement(s):** IV - A revised Keyword interface is presented when user clicks on the "+" (add keyword) button in the Keyword panel on a Record screen..

**Description:** This method controls the processing in the new keywor interface as follows:

As each character is typed, Keyword system is automatically querying Keyword master list for keywords that begin with the character(s) typed. Panel 2 displays all keywords found. Panel 1 is updated to show the first candidate keyword. Remaining characters are selected in panel 1 so that any further typing by user replaces selected text. Step 4 is repeated for each character typed. The user may select at any time any keyword listed in panel 2 by double-clicking or dragging to panel 3. The user "control-tabs" or "command-tabs" in panel 1 to accept candidate keyword and add it to panel 3. The user double-clicks item or drags item from panel 3 to trash to remove keyword from selected keyword list. The user Accepts or Cancels entries using OK or Cancel buttons.

**Method Name:** do4dDraw

**New or Modified:** New

**User Method:** No

**Requirement(s):** VII:9 - Provide access to 4D Draw. User selects "Draw..." from "Reports" menu and an independent window opens containing 4D Draw productivity window.

**Description:** Displays 4D's 4D Draw window

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**Other Items**

Below are other items that are required to meet the requirements for this Modification.:

**ItemName:** MenuBar ##  
**New or Modified:** New  
**User Method:** No

**Requirement(s):** II:9 - The Control Center will have its own menu bar with the following menus: File Menu: Preferences item and Exit or Quit Item.

**Description:** This is a new menubar and will take the next sequential menubar number and will be defined as denoted above

**ItemName:** Hierarchical Popup  
**New or Modified:** New  
**User Method:** No

**Requirement(s):** III:7 - Three pop-up menus are available in the Special Purpose section of Operations panel via the "Operation..." hierarchical pop:  
III:7b.1 - "Sets" - same function as previous "Sets" pop-up. Shows currents sets (if any) and allows user to load set, create set or access Set Manager.  
III:7b.2 - "Quick Relates" - same function as previous "Relations" pop-up. Shows optional related tables and performs related query and switch to table.  
III:7b.3 - "Module Tables" - same function as previous "Tables" pop-up. Shows other tables in module and allows user to switch to one of them.II:9 - The Control Center will have its own menu bar with the following menus: File Menu: Preferences item and Exit or Quit Item.

**Description:** This popup contains the Sets, Relates and Tables menus with the same values as denoted per table in the current TechTracS

## Appendix

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**Appendix A - Revised Estimated Hours**

Req.	Design	Construction	Testing	Documentation	Tooling	Total
n/a						

**Appendix B - Requirement Modifications**

Req.	Original Description	New Description and Comment	Date
n/a			



**Appendix C - Storyboard Modifications**

Modified Storyboards

Req.	Action	Original Detail / New Detail
n/a		

**New Storyboards**

<b>Req.</b>	<b>Action</b>	<b>Detail</b>
n/a		